

**EAST Search History****EAST Search History (Prior Art)**

| Ref # | Hits | Search Query   | DBs  | Default Operator | Plurals | Time Stamp       |
|-------|------|--|--|------------------|---------|------------------|
| S1    | 92   | (HIRATA/in. or KIMINOBU/in. or ESAKA/in. or TAKEHIRO/in.) and (exhaust near4 gas) and (engine)   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2009/11/24 12:25 |
| S2    | 38   | ((KIMINOBU) near2 (HIRATA)).INV.   | EPO; JPO; DERWENT  | OR               | ON      | 2009/11/24 12:25 |
| S3    | 22   | ((KIMINOBU) near2 (HIRATA)).INV.   | US-PGPUB; USPAT; USOCR                                   | OR               | ON      | 2009/11/24 12:26 |
| S4    | 5    | (HIRATA/in. or KIMINOBU/in. or ESAKA/in. or TAKEHIRO/in.) and (exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail) and (injector or meter)) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2009/11/24 12:26 |
| S5    | 2    | ((TAKEHIRO) near2 (ESAKA)).INV.  | US-PGPUB; USPAT; USOCR                                   | OR               | ON      | 2009/11/24 12:26 |
| S6    | 108  | ((engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near2 (injector )) ).CLM.   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2009/11/24 12:26 |
| S7    | 171  | (( (abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near2 (injector )) ).CLM.   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR               | ON      | 2009/11/24 12:26 |

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| S8  | 78 | ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter or valve) near4 (fuel or reduc\$4 or ireductant) ) and (engine near4 (output or torque or load or speed or power)). CLM.  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:26 |
| S9  | 31 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter or valve) near4 (system or device)) ).CLM.  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:26 |
| S10 | 20 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter) ) ).CLM.   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:26 |
| S11 | 11 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail) near4 (injector or meter))). CLM.  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:26 |
| S12 | 14 | (US-20070079601-\$). did. or (US-6983589-\$ or US-6487852-\$ or US-6546720-\$ or US-7216478-\$ or US-6167698-\$ or US-6119448-\$ or US-5845487-\$ or US-6357226-\$ or US-7210459-\$ or US-7257941-\$ or US-4854123-\$). did. or (JP-02283838-\$). did. or (DE-4210647-\$). did. | US-PGPUB; USPAT; JPO; DERWENT                            | OR | ON | 2009/11/24 12:26 |

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| S13 | 5430 | ("73"/\$.cls.) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter\$4 or valve or inject\$4))   | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:27 |
| S14 | 3361 | ("73"/\$.cls.) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near2 (injector or meter\$4 or valve or inject\$4))   | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:27 |
| S15 | 1116 | (exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter) )   | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:27 |
| S16 | 72   | (exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter) near4 (system or device)) and (cataly\$4)             | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S17 | 109  | (exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter or valve) near4 (system or device)) and ("73"/\$.cls.) | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S18 | 31   | (60/286.cls. or 60/303.cls.) and ("73"/\$.cls.)   | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |

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| S19 | 31  | (60/272-324.ccls.) and ("73"/\$.ccls.) and (((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter\$4 or valve or inject\$4))   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S20 | 106 | ("73"/\$.ccls.) and (((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near2 (injector ) near4 (fuel or reduc\$4 or reductant) )  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S21 | 277 | ("60"/\$.ccls.) and (((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter or valve) near4 (fuel or reduc\$4 or reductant) ) and (engine near4 (output or torque or load or speed or power)) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S22 | 47  | (exhaust near4 gas) and (engine) and (((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail) near4 (injector or meter) near4 (system or device))   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S23 | 186 | ("73"/\$.ccls.) and (((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near2 (injector ))   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |

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| S24 | 95 | ("60"/\$.ccls.) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector ) near4 (fuel or reduc\$4 or reductant) ) and (engine near4 (output or torque or load or speed or power)) | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S25 | 62 | ("60"/\$.ccls.) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near2 (injector ) near4 (fuel or reduc\$4 or reductant) ) and (engine near4 (output or torque or load or speed or power)) | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S26 | 79 | ("73"/\$.ccls.) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near2 (injector ) near4 (fuel or reduc\$4 or reductant) ) and (engine near4 (output or torque or load or speed or power)) | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S27 | 89 | (exhaust ) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail or fault or inoperat\$4) near4 (injector or meter) near4 (system or device))   | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |

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| S28 | 121 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector or meter) near4 (system or device))  | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S29 | 86  | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4) near4 (injector or meter) ) and (60/272-324.ccls.)  | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S30 | 119 | ("73"/\$.ccls.) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4) near4 (injector ) near4 (fuel or reduc\$4 or ireductant) ) and (engine near4 (output or torque or load or speed or power)) | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S31 | 235 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail) near4 (injector or meter or nozzle)) and (cataly\$4 or absorb\$4)  | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S32 | 215 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail) near4 (injector or meter or nozzle)) and (cataly\$4 or absorb\$4) and (engine near4 (output or torque or load or speed or power))  | US_PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |

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| S33 | 265 | ((engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4 or plug\$4 or leaking) near2 (injector or meter or nozzle)) and ( (output or torque or load or speed or power or accelerat\$4 or decelerat\$4)) and (60/272-324.ccls.) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S34 | 73  | ((engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4 or plug\$4 or leaking) near (injector or meter or nozzle)) and ( (output or torque or load or speed or power or accelerat\$4 or decelerat\$4)) and (60/272-324.ccls.)  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S35 | 197 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail) near4 (injector or meter or nozzle)) and (cataly\$4 or absorb\$4) and (engine near4 (output or torque or load or speed or power)) and (engine near4 (speed ))           | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S36 | 45  | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail) near4 (injector or meter or nozzle)) and (cataly\$4 or absorb\$4) and (engine near4 (output or torque or load or speed or power)) and (engine near4 (speed ))           | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |

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|     |     | near4 (restrict\$4 or<br>reduc\$4 or low\$4) )   |   |    |    |                     |
| S37 | 76  | (exhaust near4 gas)<br>and (engine) and<br>((abnormal\$4 or<br>deteriorat\$4 or degrad<br>\$4 or fail\$4 or<br>malfunction) near4<br>(injector or meter or<br>nozzle)) and (cataly\$4<br>or absorb\$4) and<br>(engine near4 (output<br>or torque or load or<br>speed or power)) and<br>(engine near4<br>(speed )) and (60/272-<br>324.ccis.)                         | US-PGPUB;<br>USPAT;<br>USOCR; FPRS;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2009/11/24<br>12:28 |
| S38 | 79  | (exhaust near4 gas)<br>and (engine) and<br>((abnormal\$4 or<br>deteriorat\$4 or degrad<br>\$4 or fail\$4 or<br>malfunction or faulty)<br>near4 (injector or<br>meter or nozzle)) and<br>(cataly\$4 or absorb\$4)<br>and (engine near4<br>(output or torque or<br>load or speed or<br>power)) and (engine<br>near4 (speed )) and<br>(60/272-324.ccis.)                | US-PGPUB;<br>USPAT;<br>USOCR; FPRS;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2009/11/24<br>12:28 |
| S39 | 100 | (exhaust near4 gas)<br>and (engine) and<br>((abnormal\$4 or<br>deteriorat\$4 or degrad<br>\$4 or fail\$4 or<br>malfunction or faulty<br>or leak\$4) near4<br>(injector or meter or<br>nozzle)) and (cataly\$4<br>or absorb\$4) and<br>(engine near4 (output<br>or torque or load or<br>speed or power)) and<br>(engine near4<br>(speed )) and (60/272-<br>324.ccis.) | US-PGPUB;<br>USPAT;<br>USOCR; FPRS;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2009/11/24<br>12:28 |

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| S40 | 287 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or malfunction or faulty) near4 (injector or meter or nozzle)) and (cataly\$4 or absorb\$4) and (engine near4 (output or torque or load or speed or power)) and (engine near4 (speed )) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S41 | 201 | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or malfunction or faulty) near2 (injector or meter or nozzle)) and (cataly\$4 or absorb\$4) and (engine near4 (output or torque or load or speed or power)) and (engine near4 (speed )) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |
| S42 | 53  | ((exhaust near4 gas) and (engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or malfunction or faulty) near2 (injector or meter or nozzle)) and (engine near4 (output or torque or load or speed or power)) and (engine near4 (speed )) and (60/272-324.ccls.)       | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/11/24 12:28 |

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|-----|------|---|---|----|----|---------------------|
| S43 | 5903 | ((engine) and<br>((abnormal\$4 or<br>deteriorat\$4 or degrad<br>\$4 or fail\$4 or fault\$4<br>or leak\$4 or plug\$4 or<br>leaking) near2<br>(injector or meter or<br>nozzle)) and ( (output<br>or torque or load or<br>speed or power or<br>accelerat\$4 or<br>decelerat\$4))   | US-PGPUB;<br>USPAT;<br>USOCR; FPRS;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2009/12/03<br>12:33 |
| S44 | 2390 | ((engine) and<br>((abnormal\$4 or<br>deteriorat\$4 or degrad<br>\$4 or fail\$4 or fault\$4<br>or leak\$4 or plug\$4 or<br>leaking) near2<br>(injector or meter or<br>nozzle)) and ( (output<br>or torque or load or<br>speed or power or<br>accelerat\$4 or<br>decelerat\$4) near4<br>(restrict\$4 or chang\$4<br>or reduc\$4) )                  | US-PGPUB;<br>USPAT;<br>USOCR; FPRS;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2009/12/03<br>12:34 |
| S45 | 303  | ((engine) and<br>((abnormal\$4 or<br>deteriorat\$4 or degrad<br>\$4 or fail\$4 or fault\$4<br>or leak\$4 or plug\$4 or<br>leaking) near2<br>(injector or meter or<br>nozzle) near4 exhaust)<br>and ( (output or<br>torque or load or<br>speed or power or<br>accelerat\$4 or<br>decelerat\$4) near4<br>(restrict\$4 or chang\$4<br>or reduc\$4) ) | US-PGPUB;<br>USPAT;<br>USOCR; FPRS;<br>EPO; JPO;<br>DERWENT;<br>IBM_TDB | OR | ON | 2009/12/03<br>12:35 |

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| S46 | 173 | ((engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4 or plug\$4 or leaking) near2 (injector or meter or nozzle)) and ( (output or torque or load or speed or power or accelerat\$4 or decelerat\$4) near4 (restrict\$4 or chang\$4 or reduc\$4) ) and (60/272-324.ccls.))               | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/12/03 12:40 |
| S47 | 64  | ((engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4 or plug\$4 or leaking) near2 (injector or meter or nozzle) near4 exhaust) and ( (output or torque or load or speed or power or accelerat\$4 or decelerat\$4) near4 (restrict\$4 or chang\$4 or reduc\$4) ) and (60/272-324.ccls.)) | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/12/03 12:40 |
| S48 | 61  | ((engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4 or plug\$4 or leaking or clog\$4) near2 (injector or meter or nozzle)) and (60/277.ccls.))   | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/12/03 12:48 |
| S49 | 20  | ((engine) and ((abnormal\$4 or deteriorat\$4 or degrad\$4 or fail\$4 or fault\$4 or leak\$4 or plug\$4 or leaking or clog\$4) near2 (injector or meter or nozzle)) and (60/277.ccls. and (60/286.ccls. or (60/295-303.ccls.))  | US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2009/12/03 12:49 |

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|-----|---|---|------------------------|----|----|------------------|
| S50 | 8 | ("20020107651"   "20020150532"   "20030101713"   "20040076565"   "6408616"   "6487852"   "6983589"   "7082753").PN. | US-PGPUB; USPAT; USOCR | OR | ON | 2009/12/03 12:53 |
| S51 | 1 | ("7257941").URPN.   | USPAT                  | OR | ON | 2009/12/03 12:53 |

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